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No. 2
of a series

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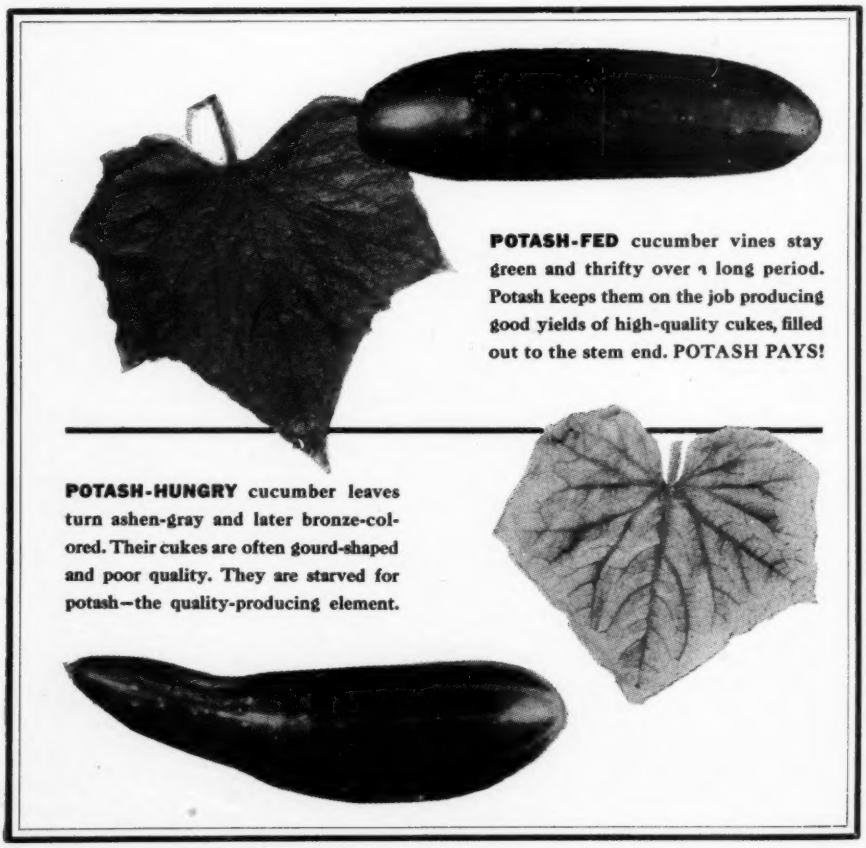

POTASH-FED cucumber vines stay green and thrifty over a long period. Potash keeps them on the job producing good yields of high-quality cukes, filled out to the stem end. POTASH PAYS!

POTASH-HUNGRY cucumber leaves turn ashen-gray and later bronze-colored. Their cukes are often gourd-shaped and poor quality. They are starved for potash—the quality-producing element.

Better Crops with PLANT FOOD

The Whole Truth — Not Selected Truth

R. H. STINCHFIELD, *Managing Editor* SID NOBLE, *Editor*

Editorial Offices: 19 West 44th Street, New York

VOLUME XIX NUMBER TEN

TABLE OF CONTENTS, OCT.-NOV., 1934

Memories of a Devil 3
Jeff in the Country Newspaper Field

Better Crops for Del-Mar-Va 7
Down on the Eastern Shore with George R. Cobb

The Inquiring Mind and the Seeing Eye 11
Dr. Alexander Pays Tribute to Dr. Jacob G. Lipman

Editorials 19

Reviews 21

Oregon Finds Profit in Potash Fertilizers 29
Joe W. Jarvis Reports Some Demonstrations

New Phosphorus and Potash Tests 30
Described by L. Van Bossche

The Compost Pile 31
How to Make It and Its Advantages, by W. B. Ward

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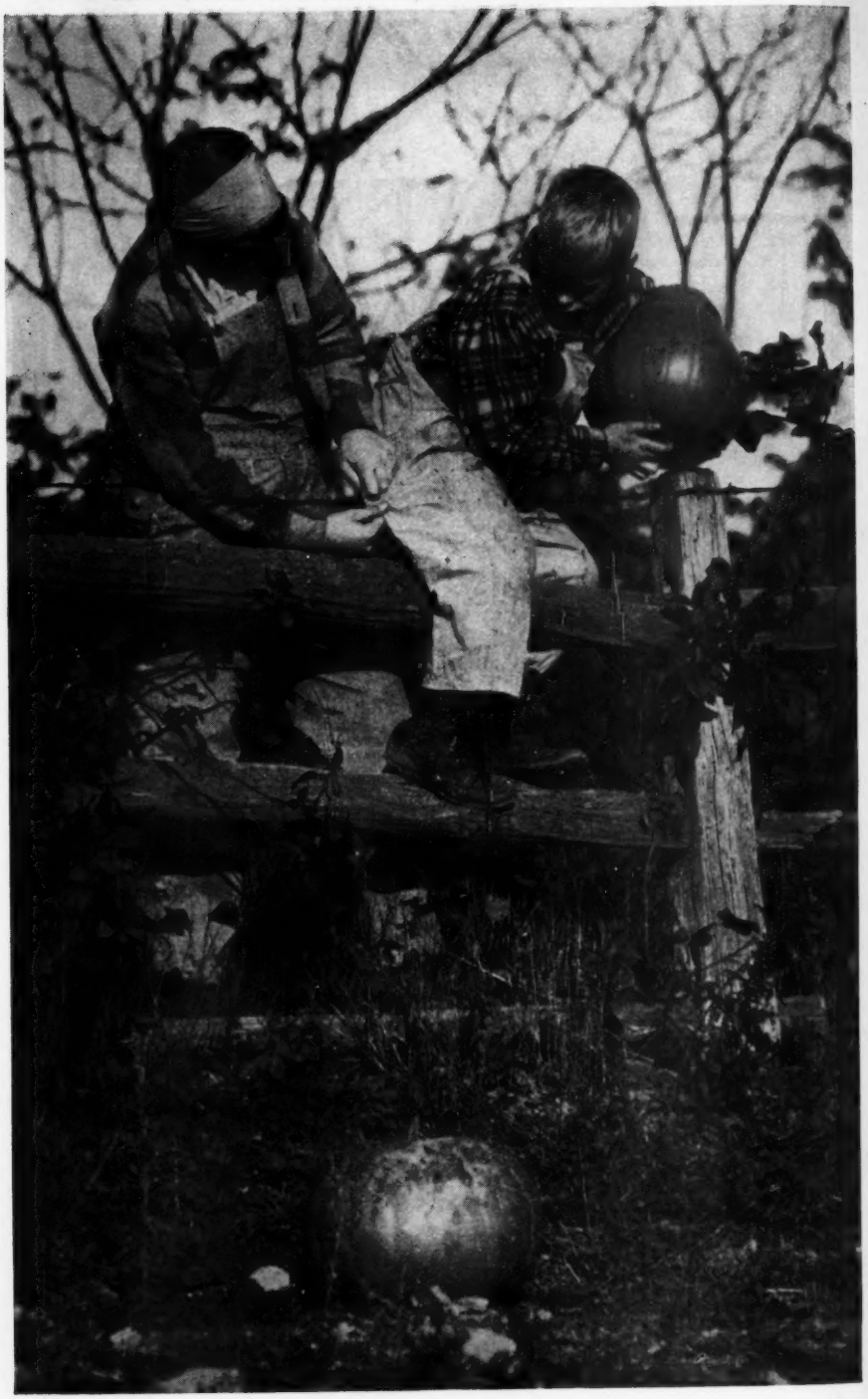

CAUGHT IN THE ACT!

Better Crops with PLANT FOOD

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VOL. XIX NEW YORK, OCT.-NOV., 1934 No. 10

Memories *of a* Devil

By Jeff McDermid

IN this age when news is stale before it happens, when teletypers, telephotos, and hourly editions engulf us in a fog of non-essentials, how does the country printer find ways to attract apprentices to his smudgy craft? Are the old thrills gone from the country sanctum and its mystic aisles of stones and cases? Does youth fail to see glamor in the flimsy sheets clacking off an old flat-bed press, just as many young moderns sense no beauty in the race-horse beside the latest tri-motor passenger plane?

Yet I dare say the three hundred provincial newspapers in my home state are as carefully read and clipped for scrap-books as the dozen or more upstanding dailies which have to label part of their pages "the comic section" so readers will actually know that the balance of the stuff is really heavyweight and serious matter.

Twenty years ago a boy with a hankering for journalism (with a big J) first took a type louse course in his home-town print shop. To become a scoop artist, a star correspondent, a

scourging editor, or a feature writer meant first becoming a devil. When schools of journalism grew apace and newspapers got ritzy, the order was usually reversed. The sophisticated geezer became a devil afterwards and stayed that way.

As I knew him the devil in our rural town establishment devoted to the advertising and gossipy arts had more real estate than third estate visible on his claws, clothes, and countenance. He first arrived at the fascinating realm of paste, ink dust, forms, and cases with his high-school gift pencil sharpened and his graduate suit nicely pressed so that he might get an assignment fitted to his acknowledged talents. That very news sheet had just published his own commencement oration and predicted for him a scintillating career amid the stars of the arts preservative.

BY night he crept home in utter disillusionment after a day spent in the borrowed overalls of a fat foreman, his hair and nostrils filled with the dirt and grime of a sweeper's job and his shiny shoes spattered with washwater from a window brush. His impatient pencil was untouched and forgotten.

Shades of Greeley, James Gordon Bennett, Joseph Pulitzer and Marse Henry Watterson! Is this the threshold of service to the commonweal? The only salve to his injured pride was a glimmering memory of a picture in a library book showing young Ben Franklin carrying his worldly goods in a bundle and munching a bun while a saucy miss derided him from a colonial doorway.

But within a fortnight the ignominy of the chore boy had given place to the first delights of typographical composition. The high and slippery stool, the blue denim apron with pockets for a shiny nickel rule and a knobby plug of twist tobacco, the possession of a rusty stick with a stiff clamp, and a slow accumulation of upper and lower case lore made the goal seem less remote. During this interval the usual initiative errands had been run in mockery for type stretchers and press tuners, while the patient face of the shock-haired tyro had received its dash of sponge water while bent over metal galleys hunting for injurious insects.

At this juncture the neophyte came to the crossroads. Which was the more desirable of the two enthralling professions, represented by a kindly printer foreman in the back shop, and the pompous, bustling city editor, who ran amuck from card parties to fires and funerals, covering them all and himself with wordy magnificence unknown to Roget or Webster?

As a matter of secret confidence, our observant novice often thought that the foreman was more capable of good English composition than the language butcher who hooked his hen-scratch copy on the door jamb of the mechanical department. Once in a moment of revolt over a bungling tribute written by the newshawk, the foreman ground the copy under foot and set up a new piece fresh from the case with fierce jabs and snorts. His breach of office etiquette was excusable, for the foreman insisted that his next-door neighbor, with whom he had fished, played checkers, and watered lawns for years, was entitled to a decently worded obituary. "His widow is *not* a relic and he did *not* die *intestine*," growled Tony, toiler of the types, while the devil stood with grimy satisfaction at his elbow.

AND how joyfully flattered the devil felt when Tony shaped his long Sunday walk so as to include a few minutes' visit with the devil's family on the summer lawn, maybe with a little lemonade and a few reminiscences of the old days for good measure. "Gosh, Ma, I guess Tony thinks I'm a regular guy now."

Although the foreman had that cramped awkwardness of an artisan in his best clothes, there was a depth of

finish and verve in his conversation which indicated that his work was imbued with some of the distinctive intelligence belonging to the best traditions of the rural press. But good old Tony never left the back room for the more notable place in the front office, although many old-timers pushed on through the news room to consult him on weighty matters relating to publicity or advertising layouts.

When the devil had mastered the cases and fonts so that he knew 18-point De-Vinne from 12-point Cheltenham and knew better than to use Old English face on an auction bill or a stud-house poster, he had a chance to pick type and make up display advertising or headlines. From this his progress was hardly rapid enough to suit to the point where the occasional make-up, lock-up, and planing down for the press was permitted him under the scrutiny of the sub-foreman. Meanwhile Tony oiled the Whitlock in readiness for the mammoth weekly run of five thousand copies.

Then came the lock-up and the rat-tat of the planer smitten with a Quoin key. With a "yo heave" a double-page chase would be jerked up edgewise and held with one hand while the proud devil shifted his quid knowingly and scanned the sloppy surface of the stonetop table to spy any loose type or copper spaces that might have slipped out below. "Is she all tight and well justified?" was the query, and if so, the form was slung up under the arms and across the devil's greasy overalls at the belly, to be hurriedly taken to the rear room for the press.

Majestic as Moses with his rod or a starter for a cup race, the old foreman stood at the foot of the press while the forms were screwed in securely on the oily bed. Then his snuff-box came out, receiving its familiar tap on the cover, perhaps with a proffered pinch to the devil. Glancing up at the red-haired sub-foreman perched near the electric switch behind the high feed-board, Tony raised his streaky arm and snapped his inky fingers. It was the signal which sent the juice jumping into the heart of the groaning and bumping press, and the rubber-tipped middle finger of the sub-foreman began its swift and tireless lifting and shoving of the blanket-like sheets down toward the steely grippers above the thudding cylinders.

The devil envied Jim his feeding job aloft, even as the cook's galley helper looked with longing at the reefer high in the rigging of old clipper ships in days of yore. With resignation he sat down at the head of the press where his humble job was to keep an eye on the printed sheets on the receiving table, catching an occasional ripper or lifting up new stocks of paper to the feeder.

And memory brings the bitter and the sweet—mingled like the smell of climbing roses and lilacs in the neighboring yard with the interior odors of the craft on slumberous summer afternoons.

The bitterest of the bitter was the awful pile of pi, a conglomeration of leads, slugs, metal furniture, linotype metal and miscellaneous type, flung back and down one winter night in a terrific sling of the unclamped press bed. The crack of doom and the fall of Jericho! Nothing but several brooms, a hoe, a scoop shovel, and a bushel basket served to retrieve the mess from odd corners. How shamefully the devil was blamed for his miscue at the press clamp, and how his professional pride seared and cankered as he was forced to run six

blocks to the rival weekly paper for a loan of its forms for service to subscribers of the wrecked palladium! The spare time of the devil for the next six weeks was spent in the jigsaw puzzle game of sorting the evil remnants of that careless hour.

AH, yes, and also thoughts of the sweet! When the lights glimmered in the murky composing room in the last hour of some winter day before the six o'clock chimes boomed and the faithful apron was leaned against the wall, romance stole its pleasant march. Tripping coyly from her desk in the front sanctum, beside the old boss, where she kept books and took want-ads, the devil's heroine stopped to touch a type or two with dainty finger tips, bending over so as to fan the freckles on his cheeks with her perfumed tresses.

"Can you really dance?" or "Perhaps by next Saturday your nails and knuckles will be in better shape for a party," or "Do you like Fox's Tale of the Lonesome Pine? Don't you just *love* the Hiawatha waltz?"

I can't really believe it now as I shave across the facial seams of time —but there must have been a mite of passing attraction for the little lady in the gawky devil, fumbling at his work while the printer's going-home-time brought hints of social sofas and family albums. And of course in one or two interludes there was a jubilee shindig at the armory hall, where the annual firemen's ball and masquerade brought forth all the musty treasures of attic raiment. However, like the political eulogies in our faded files, nothing but hope and a little outlay of savings resulted from this companionship of the front office fairy and the goblin of the shop.

Training thus secured by degrees from both the menial and the mental standpoints was not only fruitful of patience and care, but it developed a less generally recognized quality which has often failed to appear in modern journalism with its quick turnover and its glamorous haste. This quality is not only of basic value to the profession of a newspaper man, but it cannot help leaving over a long span of years its benefits to the residents of the community itself.

It is the nursing of local and county tradition with the relation of that tradition to the growth and perpetuation of the state. It takes on unconsciously something of the flavor of the earnest community loyalty and sense of honor which typified the viewpoint of the old South during the Civil War period. I do not mean a musty or mushy romanticism gone to seed, but a living force that should be encouraged for the creation of nobler aspirations and the pride that falters at nothing so much as cheap notoriety and ruthless ambition.

WE of the old town publishing craft were discriminating, guarded, judicious, and considerate lest we do some grave personal injustice or stir up some private mistakes that made men their own worst enemies rather than public ones. We laughed at foibles tenderly, indulged in harmless wit that left no permanent scars, and tried our best to grant every man a proper hearing. We never tried to convict the accused before the trial or printed yarns of dirty things in alluring feature slop. Surely, we made errors and accumulated enemies, but the enemies we made were our principal insurance.

Of course this conservatism may have allowed some of our public to become the occasional victims of a local Shylock or a cheat; but financial domination had not at that time become alarming or powerful, and the small town commercial rascals usually were found out and punished "off the record" by word of mouth and the withholding of patronage.

And as for "crusading"—I am not always so sure that it has been well done even by papers with power and independence. For if we put our

(*Turn to page* 32)

Mr. B. S. Morris in a field of soybeans and cowpeas on his farm near Salisbury, Maryland.

Better Crops *for* Del-Mar-Va

By George R. Cobb

Salisbury, Maryland

EVER since 1620 when Squanto demonstrated to our Pilgrim forefathers the art of growing corn with dead fish as a fertilizer, this particular crop has, indeed, been King.

It is true that the Indians were unable to continue growing corn on the same land year after year as yields and quality decreased, but they, not knowing why, simply abandoned fields and planted their corn on another section of land. Later they followed a sort of rotation in that they let fields lie fallow for a year and then burned off the weeds, grass, and other growth that had developed. They noticed that where the growth was burned the corn did better and they reasoned that the ashes must have had some beneficial effect. Gradually they began the use of wood ashes in addition to the fish, and larger yields resulted.

Although records are not available as to yields back in those Colonial days, it seems rather safe to assume that with the present-day knowledge larger and better crops of corn are grown. For many years Experiment Stations and Extension Services have been discovering new truths regarding the culture of nearly every known crop, and surely with the information they have issued to farmers and others, yields of all crops, as well as improved quality, have increased to a great extent.

Statistics compiled by the Department of Agriculture do not bear out

the assumption that yields of corn have increased greatly during the past years. For example, in 1891 the average yield of corn per acre in the United States was 27.6 bushels (56 pounds shelled corn) while in 1924 the yield had dropped to but 22.9 bushels per acre. Admitting that low yields may have been caused by weather conditions, insects, and diseases, the fact remains that from 1891 to 1929 the highest yield was in 1920 when the average was 31.5 bushels per acre as compared with 27.6 bushels in 1891—not a striking increase.

Del-Mar-Va Figures

Confining our attention to the States, counties of which comprise the Del-Mar-Va Peninsula, we find the following statistics: In 1899 the State of Maryland had 658,010 acres in corn and the total yield was 19,766,510 bushels or an average of 30 bushels per acre. In 1929 Maryland had 463,293 acres devoted to the crop with a total yield of 14,543,218 bushels or an average of 31.3 bushels per acre. Figures for Delaware and Virginia are: In 1899 these two States had 192,025 and 1,910,085 acres in corn, respectively, with total yields of 4,736,580 and 36,748,410 bushels. The averages, per acre, were 24.6 and 19.2 bushels. Thirty years later, in 1929, we find that the acreage has been reduced in each State and the average yields were 26.8 and 24.2 bushels, respectively.

It is safe to assume that the decreased acreage in part may have been due to the abandonment of marginal acres or land that would not produce a profitable crop of corn. Admitting this to be true, the increased yields for the three States during this 30-year period were: Maryland, 1.3 bushels; Delaware, 2.2 bushels; and Virginia, 5.0 bushels.

The above figures are submitted as preliminary to the report on demonstrations and farm practices conducted on the Del-Mar-Va Peninsula which have resulted in greatly increased yields and improved quality.

There are more than 400,000 acres of land devoted to the culture of corn on the Peninsula and it is perhaps one of the most important crops grown, although very often neglected. Before the days of the Hoffer test on corn for plant-food deficiencies, many and varied were the methods employed to detect and correct these deficiencies. But some of the methods employed brought results in no uncertain terms.

B. S. Morris, a farmer residing near Salisbury, Maryland, consulted his County Agent regarding the corn crop on his farm. The stalks were short, many of them less than knee high, and the majority of them fell over during the season, with resultant low yields of poor, chaffy corn and practically no fodder. Mr. Morris had been in the habit of using rye as a cover or green manure crop and applied per acre 1,000 pounds of superphosphate each year with a generous application of lime once every three years. The initiated would assume at once, in the light of present-day knowledge, that this practice had depleted the potash supply, but at that time many facts regarding plant foods were not available or proved.

Called on Science

Extension specialists were called in by the County Agent, and when they examined the corn they noticed that many cobs were discolored, the color ranging from a pink to a dark red, which they decided indicated a diseased condition. The first thought was that if only clear-colored cobs were selected and the corn from them planted, an improvement would be noted. Several hours were spent with Mr. Morris in assisting him to select seed free from diseased symptoms. Tips and butts of hundreds of ears of corn were chopped off with a corn knife; cobs were examined; all discolored specimens were set aside; and only the clear cobs were selected for planting.

In order to obtain more detailed information and to act as a check, cobs showing heavy discoloration and others showing but slight color also were used in planting what we may call additional check plots. This demonstration was continued for three years and the average increase secured from the grain on clear-colored cobs over that on discolored cobs was 11 bushels per acre. But the stalks still continued to fall over, although not as many as before, and the grain itself was not of high quality.

Although treating the seed before planting cost but about three cents per acre, the increase in yield was only from three to six bushels.

One particular five-acre piece of land had such a poor crop that Mr. Morris did not "even step into the field to gather any corn or fodder as it would have been a waste of time and labor." It was decided to concentrate on this five-acre field and as the first step a legume was to be introduced into the rotation replacing the rye crop. A mixture of soybeans and cowpeas was seeded broadcast. As the legumes began to develop, it was noticed that the foliage was of a peculiar green color—a rather blackish green. It was learned that lack of potash tends to cause such an abnormal green color and that later in the season the leaves may show a yellowing and browning on the edges, or what has been termed Chlorosis.

Incidentally soybeans can be used very efficiently as a potash indicator. They will show either the blackish green color or a chlorotic condition early in their growth and the crop may then be turned under, the proper fertilizer applied, and another crop seeded so as to mature that season.

A local fertilizer concern donated 100 pounds of muriate of potash for the demonstration and this amount was applied to one acre in the five-acre field, after the legumes had been cut for hay in one instance and turned under entire in another. Corn was planted in the usual manner with an application of superphosphate and lime, but no nitrogen as it was thought that the legumes would supply sufficient.

The crop started off vigorously and it reached a good height before tasseling. No falling stalks were noted during the first part of the season, and indications were that each stalk would have two ears, which is a rather unusual occurrence on the light soils of the Peninsula.

At harvest time the corn was gathered and weighed and the weights were checked by extension men. The acre receiving no potash and having no legumes but getting an application of superphosphate and lime yielded but

Left—Fertilized with well-balanced plant food. **Right—No fertilizer.**

5½ bushels of poor corn, mostly nubbins. The stalks on this acre were short, most of them had fallen, and no fodder was available. On the acre receiving phosphate and lime and planted to a legume but with no application of potash the yield was 17 bushels of poor quality corn. Many of the stalks on this acre had fallen during the season, and there was a decided lack of foliage or fodder.

The acre receiving potash in addition to superphosphate and lime and having the legumes turned under yielded 73 bushels of corn. This very striking increase might be considered a "flash in the pan" were it not for the fact that since the demonstration Mr. Morris has followed similar methods with resulting yields of approximately 60 bushels per acre.

If one considers the experimental evidence available, the above result cannot be set aside as incorrect or any "miracle." It is a fact that potash develops the starches and sugars, and as good quality corn contains a large proportion of starch, it is reasonable to assume that without potash little, if any, starch will develop.

Potash Makes Starch

In Bulletin No. 175 from the Purdue University Agricultural Experiment Station, entitled "Composition of Maize at Various Stages of Its Growth," we find evidence that the greatest starch formation period is between September 24 and October 1, when the supply of available potash very often is very low. Without complete formation of starch the corn is chaffy, and the investigations reported in this bulletin show that starch formation is hindered or prevented when the potash supply is low or lacking.

Referring again to the Purdue Bulletin the authors, W. L. Jones, Jr. and H. A. Huston, conclude that the "maize plant took up about the same amount of phosphoric acid, about 35 per cent more nitrogen, and *more than twice as much potash* as the authorities usually state the crop contains."

A very valuable reference for farmers along the Coastal Plain, especially those living in New Jersey and on the Del-Mar-Va Peninsula, is Delaware Bulletin No. 146, "Corn Production Experiments in Delaware." This bulletin reports the results of 15 years' experimental work with fertilizers on certain crops grown on a Sassafras silt loam soil. As there are more than a half million acres of this soil in the States mentioned, the results cited in this bulletin should be of much value to farmers and others dealing with this soil.

Potash Increases Yields

In summarizing the results on corn as reported in the Delaware bulletin, we find that in yield per acre, yield of sound corn, and percentage of sound corn, the plots receiving potash produced more than those plots with no potash. Nitrogen, phosphorus, and potash were applied separately and in combination to the several plots. Average yields on plots receiving potash were 71.2 bushels per acre as compared to 42.6 bushels on the no-potash plots; yields of sound corn were 60.5 and 26.8 bushels respectively, or 84.8 and 62.9 per cent of sound corn. Considering these results and others obtained in the investigations, the author, George L. Schuster, concludes that on this soil and with the rotation followed (1—corn, followed by a cover crop, 2—soybeans, 3—wheat, and 4—timothy and clover) potash was the first limiting factor. He also concludes that potash produced the greatest increase in the percentage of sound corn of any of the single fertilizer materials applied.

Potato growers in Virginia plant corn between every other row of potatoes and thus produce two cash crops and a green manure crop, rye which is seeded at the last working of the corn, on the same piece of land each year. Fertilizer tests on 29 of these farms

(*Turn to page* 32)

The Inquiring Mind *and the* Seeing Eye

By Dr. A. S. Alexander

University of Wisconsin

FROM the far-away land in Russia that borders the southeastern shores of the Baltic Sea, came Michael Gregory Lipman, in 1887, to establish a home in the United States. In 1888, he was joined by his family, which included his fourteen-year-old son Jacob Goodale Lipman, destined to become, in 1911, the Dean of Agriculture and Director of the New Jersey Agricultural Experiment Station of Rutgers University at New Brunswick.

The immigrant boy had been given a sound early training in the rudimentary branches of learning, by tutors in Friedrichstadt and in Moscow, and in the Classical Gymnasium in Orenburg where, by his industry, he became an honor student. During that time he also learned much of the Tartar and Kirghis lore, while spending his vacations in the Steppes of the Ural region.

On arriving at his new home, he continued his education under private tutors, and being endowed with keen mentality, indomitable will power, perseverance, and fidelity to the tasks presented, his genius and talents found full scope. Opportunity and environment quickly developed the lad, and freed from deterrent influences and cramping conditions, in the new land of freedom he prepared himself for the onerous duties which later in life he undertook and conducted in the masterly manner which has made him famous.

In 1891 the family settled on a farm in the Baron de Hirsch Colony at Woodbine, N. J., where for three years young Lipman learned the art of farming by hard work and close observation. There, too, the inspiring teaching of Professor H. L. Sabsovich endued him with a strong love of agricultural science and inclined him in the direction of original research.

He graduated from the farm school of the colony, won a State scholarship at Rutgers, and entered college in the autumn of 1894. His experience in South Jersey, before entering college, included the building of roads and the usual training in the clearing and improvement of scrub-oak land. He also set out a peach and apple orchard and produced small fruits and vegetables for the shore market.

Inspiration from Teachers

As a student at Rutgers, he received inspiration from Dr. Edward B. Voorhees, his predecessor as Director of New Jersey Agricultural Experiment Station, and from such able teachers and scientists as Byron L. Halstead, John D. Smith, and Julius Nelson. Occupying a room at the College Farm, he met his expenses by doing farm work in his free hours, and spent some of his week-ends supervising two-day tests of Holstein cows in Somerset and Sussex counties. As an

undergraduate, he became especially interested in agricultural chemistry, soils, and fertilizers, and in advanced registry testing, which work was then in its early stages of development.

Graduating from Rutgers in 1898 with the bachelor of science degree, he was employed as assistant chemist in the fertilizer inspection laboratory of the experiment station, and analyzed thousands of samples of fertilizers, feeds, and farm products. In the autumn of 1899 he resigned to take up advanced study in soil chemistry and bacteriology under Dr. G. A. Caldwell and Dr. V. A. Moore at Cornell. There he earned the degree of Master of Arts in 1900, and that of Doctor of Philosophy in 1903. In 1900 he had been appointed a Graduate Scholar in Agricultural Chemistry and in 1901 Sage Fellow in Chemistry. That fellowship he resigned and he returned to Rutgers where in 1901 he organized the Department of Soil Chemistry and Bacteriology and began his investigations in these comparatively new phases of agricultural science.

In 1911 he was appointed Director of the New Jersey Experiment Station and in 1915 Dean of the College of Agriculture. In 1923 he was honored with the Doctor of Science degree by Rutgers University and in 1930 he received the degree of Honorary Doctor from the Catholic University of Santiago, Chile, and was made an honorary member of the faculty of the University of Santiago.

A Lesson and a Promise

All of these achievements have redounded to the credit and honor of Dr. Lipman's sterling forebears in that far-off section of the Duchy of Courland in Russia, which now forms a part of the Republic of Latvia, and to the early training wisely given him by his far-seeing parents, and more than all to his own talents, industry, and efficiency.

And now, looking back upon his own experiences and the progress of agriculture, he tells us that the story of the past fifty years carries with it a lesson and a promise. Crude methods have been refined. Human and animal power have given place, in large measure, to the seething energy of the electric motor and the internal combustion engine. Crude tools have been made more perfect and more numerous. There is more strength in our land, more vitality in our plants, and more quality in our livestock. Science has brought to us a new skill and a new confidence. It has shown us many a mystery and has revealed many truths. Thus, we know how to build better soils, better plants, and better animals. We know how to defend them against bacteria, fungi, and parasites. Our knowledge and skill have made it possible for us to become specialists in the fields of horticulture, dairying, poultry, and other branches of agricultural practice. They have given us higher standards of living, better homes, and a wider outlook on life.

Spreads Credit

Dr. Lipman not only is glad to give due credit to those great men who before him and in his day have contributed to the advancement of scientific and practical agriculture, but graciously remembers with admiration and appreciation the work of the wives and mothers in the modest farm homes of the country. He says that they, too, had tools and appliances, but they were pitifully inadequate. He marvels at their physical and moral courage as they went on with the bearing and rearing of children, the endless sewing and mending, the cooking and the baking, and all the tasks that were a part of the making and keeping of the farm home. Theirs was the faith and hope of the builder. Yet, despite the hardships they endured, there were songs and gladness in their simple and colorless days. They foretold the wider horizons of our own day, of an agricultural unfolding, and

of a national life clothed with a new meaning.

We have pressed forward to the conquest of material things and we have used the tools of science and research institutions to bring us greater understanding and comforts, surely, and, we hope, also nobler ideals. And assuredly all of us, with Dr. Lipman,

DR. JACOB G. LIPMAN

should appreciate the work of the pioneer farm women of America, without which the progress in agriculture and farm life we so commonly credit to the efforts of man alone could not have been achieved.

Dr. Lipman was born in Friedrichstadt, Russia, November 18, 1874. His father was born in the town of Bansk, and his mother, Ida Birkhahn Lipman, in the town of Friedrichstadt. Dame Lipman is still alive, and much esteemed and beloved. In 1902 Dr. Lipman was married to Cecelia Rosenthal, who was singularly charming and who cooperated with him in all of his undertakings until she passed away in 1928. Her decease was deeply mourned by her husband, three sons, and everyone connected with Rutgers College and the Experiment Station.

Dr. Lipman's career as an educator and scientist, outlined in the fine history of New Jersey's Agricultural Experiment Station written by Dr. Carl Raymond Woodward, assistant to the President of Rutgers University, and Ingrid Nelson Waller, formerly associate editor of the Experiment Station, has covered an exceptional range of activity. In Rutgers College he has served successfully as instructor in agricultural chemistry, 1902-06; assistant professor, 1906, and associate professor, 1906-07. From 1910 to 1913 he was professor of soil fertility and bacteriology. Since 1913 he has held the rank of professor of agriculture, and since 1915 he has been Dean of Agriculture. For brief periods also he has served other institutions.

He delivered series of lectures at the University of Illinois and at Cornell University in 1906, at the University of Tennessee in 1909 and 1910, at the Iowa State Agricultural College in 1910, and at the University of Nebraska in 1911. Among his contributions in the field of agricultural science may be noted numerous papers on soil microbiology, soil chemistry, commercial fertilizers, etc.

Inventories Plant Food

Within the past twenty years he has accumulated a large mass of data on the inventory of the plant-food resources of the soils of the United States. He is planning to devote his Sabbatical leave of absence (July 1, 1934—June 30, 1935) toward carrying forward this particular study. He has represented the United States at various international congresses, such as the General Assembly of the International Institute of Agriculture at Rome, Italy, in 1922, 1923, and 1926; the World's Dairy Congress, London, England, 1928; the International Conferences of Soil Science, in Prague, Czechoslovakia, in 1924, and at Rome, Italy, in 1926. He also was

a delegate at various international scientific meetings in France, Sweden, Denmark, Germany, and Holland. He was the first president of the International Society of Soil Science, and President of the First International Congress of Soil Science, which was held in Washington in 1927.

He has made agricultural surveys of the Everglades in Florida, of sugar plantations in Cuba, and of agricultural colonies in Palestine. He was the founder and is the editor of the international monthly magazine *Soil Science*, and is consulting editor of scientific journals published in Germany, France, and Russia. He has edited the series of text-books in Agricultural Science published by John Wiley and Sons.

Authority in Bacteriology

His *Bacteria in Relation to Country Life* (MacMillan, 1908) gained for him wide recognition as an authority in agricultural bacteriology. This work was followed in 1911 by the *Laboratory Guide of Soil Bacteriology*, prepared and published jointly with P. E. Brown. He is the author of a chapter on "Microorganisms in Soils" in Marshall's *Microbiology* (Blakiston, 1911) and a chapter on "Microorganisms in Relation to Soil Fertility" in *The Newer Knowledge of Bacteriology and Immunology*, edited by Jordan and Falk (University of Chicago, 1928). His other contributions include a chapter in *Too Many Farmers* by McMillen (Wm. Morrow and Co., 1929) and articles in Bailey's *Cyclopedia of American Agriculture* (MacMillan, 1908) and in the *Book of Rural Life* (Bellows-Durham Co., Chicago, 1925). His studies are further recorded in a long list of technical papers on soil chemistry, soil bacteriology, and agronomy.

Dr. Lipman was made a fellow of the American Association for the Advancement of Science, and has been honored with membership in a large number of professional and scientific societies. A partial list includes: American Public Health Association, American Chemical Society, Society for the Promotion of Agricultural Science, American Society of Agronomy, Association of Official Agricultural Chemists, Society of American Bacteriologists, Association of Land-Grant Colleges (Vice-President, 1928), New Brunswick Scientific Society, New Jersey Science Teachers' Association, New Jersey State Sanitary Association, Washington Academy of Science, New Jersey State Chamber of Commerce, New Jersey Cooperative Industrial Commission, American Academy of Arts and Sciences, and American Academy of Political and Social Science, National Research Council, International Commission of Agricultural Ecology, Reale Academia del Georfofili di Firenze, French Academy of Agriculture, Academy of Agriculture of Czechoslovakia, and the Swedish Royal Academy of Agriculture. In 1922 he was awarded a silver medal by the French Academy of Agriculture.

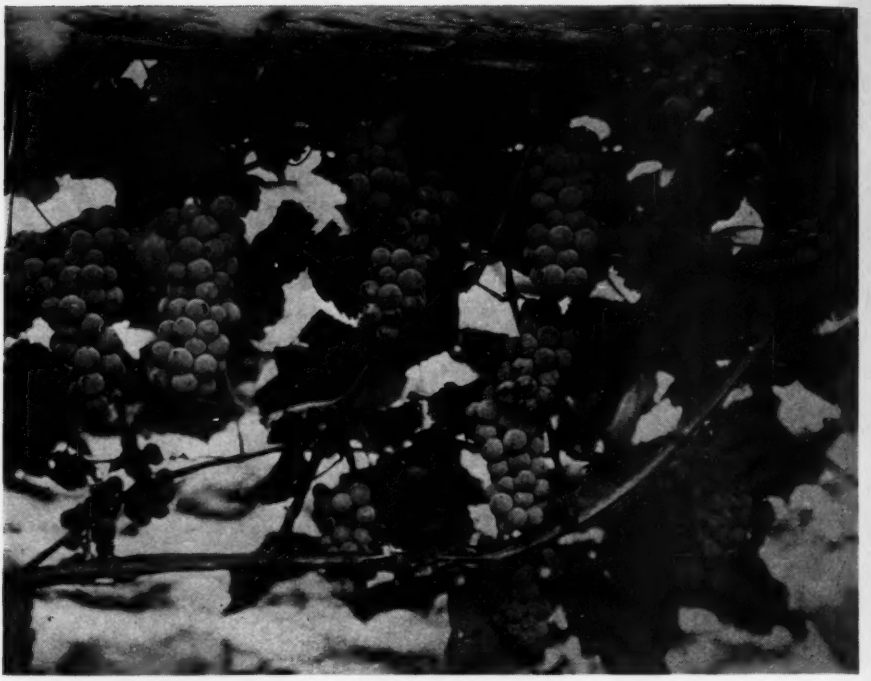
Active in Many Lines

During the past two years, Dr. Lipman has been very active in emergency relief work. As Dean of the College of Agriculture and Director of the Experiment Station, he has been given administrative responsibility over Federal projects involving mosquito control, surveys of housing, tax delinquency, and part-time farming in New Jersey; State projects involving the clearing, stumping, draining, and landscaping of 100 acres of land adjoining Route No. 26; the construction of a trunk sewer at the College Farm; surveys of the pollution of streams by industrial wastes; and other surveys relating to dietaries, bacterial quality of milk sold in the State, soil erosion, Dutch elm disease, etc. As a member of the State Planning Board, he is concerned with the planning of P.W.A. and C.W.A. projects,

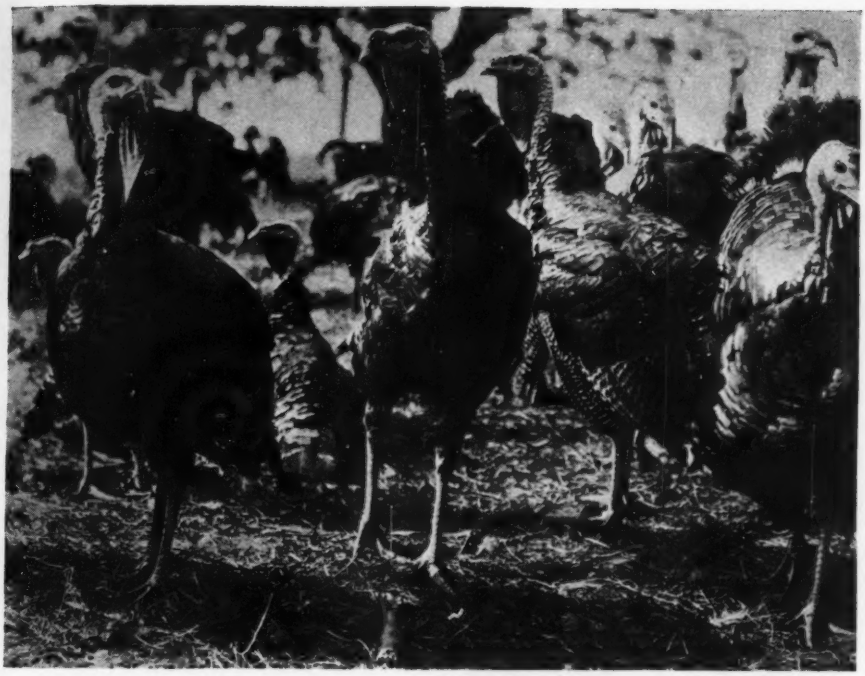
(*Turn to page* 25)

Pictorial

"HOW COME I MISSED THAT TIME?"



These, grown in New England, are representative of many of the fine fruits which will appear on Thanksgiving dinner tables.



The Thanksgiving piece de resistance and (below) "Grandmother's on the farm," scene of many family gatherings for the feast day.

Not the wigwams of "Injun Summer," but hemp in the shock.

The Editors Talk

We Give Thanks

With harvests secure, we again approach the day of our national Thanksgiving. As in other years, there will be many who will hesitate, pondering over just what individual blessings 1934 has dealt them. May all bitterness and regrets be forgotten in the spirit of the day. It is a time for reflection flavored by a sense of well-being resulting from laden tables in our American homes. Charitable organizations will work overtime to provide those, who might otherwise not feed well, with this sense of well-being.

Tradition tells us of the first Thanksgiving; of the farmer of plain sense who arose before the assembly of Pilgrims met to proclaim another fast day to be spent in prayer, seeking relief from heaven and laying their wants and distresses before the Lord; of his suggestion that constant meditation and discourse on these subjects kept their minds gloomy and discontented and that it would be more becoming the gratitude they owed the Divine Being if, instead of a fast, they should proclaim a thanksgiving; and of the acceptance of his advice. Throughout successive years, many of them fraught with adversity, this spirit has obtained. Let none of us forget it this year.

A Potash Problem

The disappearance of potash upon analyzing samples of mixed fertilizers is a perplexing problem which has baffled fertilizer manufacturers and chemists for some years. For instance, when enough potash salts are used in a mixed fertilizer to make say 10 per cent of actual potash in the mixed goods, and when the mixture is analyzed the results obtained often show less than 10 per cent potash, say 9.7 per cent, what happens to the .3 per cent?

The percentage of potash stated in the analysis of the mixture represents that portion of the potash which is soluble in water. But recent work on this problem by H. R. Kraybill and S. F. Thornton, the State Chemist and Assistant Chemist respectively of the Purdue Agricultural Experiment Station in Indiana, shows that extracting fertilizer samples with double the prescribed amount of boiling water and boiling the sample with water failed to give a complete extract of the available potash.

Some available potash is left in the residue. In some fertilizers, the amount of this available potash remaining in the residue is quite small, but with others it amounts to as much as 0.8 per cent of actual potash. The average as determined by Kraybill and Thornton is .3 per cent. They also show conclusively that this potash which remains in the residue and which is not extracted by water is still readily available to plants. For this purpose the Neubauer method of growing rye under controlled conditions was used. By this test the potash in the fertilizer residues was recovered by the rye. Kraybill

and Thornton found that extraction of a mixed fertilizer sample with a dilute salt solution extracts all the potash and gives a residue free of available potash.

It so happens that while this work was being done in Indiana, Dr. William H. Ross and several chemists of the Fertilizer Unit of the Bureau of Chemistry and Soils, United States Department of Agriculture, were attacking the same problem. Their results showed that there was no chemical change which caused a loss of available potash in the fertilizer mixtures but that with the present methods of analyzing such mixtures for the potash content, substances are formed in the course of analysis which create a coating over the potash thereby interfering with its determination. Thus the actual availability of potash in the average fertilizer mixture is not lessened by the contact with other constituents, but the method of extraction has caused a loss in the analyzed sample which does not occur in the mixed fertilizer used by the farmer.

The practical problem before the fertilizer mixer is that he must comply with the various State laws regarding the sale of fertilizers. The law requires that the amount of water-soluble potash stated in the analysis when the fertilizer is sold must be found when the mixture is analyzed by the State Chemist. If samples of mixed fertilizers consistently run under their guaranteed potash content, then the manufacturer is involved in various penalties. On the other hand, if he adds more potash than is required to allow for this loss, then the cost of the fertilizer is increased. Consequently, an improvement in the method of determining the potash available to plants in mixed fertilizers is a matter of importance.

Results of the investigations, both as carried on by Dr. William Ross and by Kraybill and Thornton, are being brought to the attention of the Association of the Official Agricultural Chemists at the annual meeting in Washington. It is hoped that the results of the work already reported can be used as a basis for making it possible to obtain more accurate results of potash analysis in mixed fertilizers.

A New "News" for Farmers

The New York State Agricultural Experiment Station is to be congratulated on the publication of a new paper entitled *Farm Research*. As stated by the editors, it is written for farmers. It is intended chiefly for New York farmers, but farmers everywhere who wish to keep informed on new developments in the work of the New York Station may be included among those to whom this little quarterly is sent.

Farm Research is an effort to put the work of the Experiment Station before the farmers in a direct and concise manner. It is designed to acquaint its readers with the personnel of the Experiment Station and to inform them on the wide range of work carried on in the Station laboratories and fields. The editors hope to make clear to the farm constituency just what is being done with the funds appropriated by the State of New York for research in agricultural work and just how farmers can best realize on this investment.

The paper is well edited and printed. The articles are practical and easy to read. *Farm Research* should not only serve a definite need in the State of New York, but serve as an example in places that already do not give periodically a bird's-eye view of what the State is doing.

REVIEWS

This section contains a short review of some of the most practical and important bulletins, and lists all recent publications of the United States Department of Agriculture and the State Experiment Stations relating to Fertilizers, Soils, Crops, and Economics. A file of this department of BETTER CROPS WITH PLANT FOOD would provide a complete index covering all publications from these sources on the particular subjects named.

Fertilizers

A thorough investigation of the action of nitrogen in various forms and amounts in the fertilization of tobacco has been made by W. W. Garner, C. W. Bacon, J. D. Bowling, and D. E. Brown and published in U. S. Department of Agriculture Technical Bulletin 414, "The Nitrogen Nutrition of Tobacco." The importance of an adequate nitrogen supply, together with phosphoric acid and potash, to produce good yields of high-quality tobacco is shown. The abundance of information presented in the bulletin precludes giving any of the details here. Growers, agricultural advisers, and fertilizer manufacturers will be especially interested in the work on rates of nitrogen application, comparison of nitrogen carriers, and the use of concentrated fertilizer materials. Investigators will be interested also in the chemical and physiological studies and the attempt to apply the Mitscherlich growth formula to the data obtained with increasing nitrogen applications.

The influence of phosphoric acid and potash on tomato plants grown in the greenhouse under experimental conditions is shown by George Janssen, R. P. Bartholomew, and V. M. Watts in Arkansas Agricultural Experiment Station Bulletin 310, "Some Effects of Nitrogen, Phosphorus, and Potassium on the Composition and Growth of Tomato Plants." This work will be of interest mainly to investigators. Of practical significance, it is brought out that the grower should strive to use a balanced fertilizer. The results indicate that the ratio of nitrogen, phosphoric acid, and potash may be as important as the absolute amounts present provided, of course, that sufficient nutrients for optimum growth are available. The work reported does not contain enough variation of nutrient ratios to enable to be drawn conclusions as to what might be the optimum ratio, since this was not the purpose of the investigations. The tomato plant appears able to adapt itself to a wide range of nutrient conditions and still make a normal growth.

An excellent bulletin describing short tests for the estimation of the lime and fertilizer requirements of soils and crops has been prepared by S. F. Thornton, S. D. Conner, and R. R. Fraser as Indiana Circular 204, "The Use of Rapid Chemical Tests on Soils and Plants as Aids in Determining Fertilizer Needs." The bulletin describes clearly how to prepare the chemicals, make the tests, and interpret the results. The system of testing presented can be used on both plant tissues and soils. This combination has advantages over the testing of either of them alone, since conditions have been found where only by testing both soil and crop would a correct estimation of the fertilizer needs be obtained. The authors include a good discussion of the advantages and limitations of short tests and precautions that must be observed

in using them and interpreting the results.

"The Phosphate of Southern California Soils in Relation to Citrus Fertilization," Agr. Exp. Sta., Berkeley, Cal., Bul. 571, Apr. 1934, H. D. Chapman.

"Sewage Sludge as Fertilizer," Agr. Exp. Sta., New Brunswick, N. J., Ext. Bul. 125, May, 1934, Willem Rudolfs.

"Recommendations with Reference to the Fertilization of Flue-cured, Sun-cured, and Shipping Tobacco Grown on Average Soils in Virginia, North Carolina, South Carolina, and Georgia for the Year 1935."

"Fertilizer Report 1933," Dept. of Agr., Harrisburg, Pa., Gen. Bul. 525, Vol. 17, No. 6, Oct. 1, 1934, John A. McSparran and James W. Kellogg.

"Analyses of Commercial Fertilizers," Agr. Exp. Sta., Clemson College, S. C., Bul. 297, Aug. 1934.

Soils

The results of the various soil experiment fields maintained by the Illinois Agricultural Experiment Station in 1933 again furnish much interesting and valuable information. The fields are located at 26 different places in the State on representative soils. The data thus furnish a good guide to the relative fertility of the principal soils in Illinois. The soils are shown to vary considerably in their natural fertility and, as might be expected under these conditions, the system of soil treatment that gave the best results was not the same on the various soils. The work emphasizes that the fertilizer must be adapted to the soil fertility and cropping system if best results are to be obtained. The data and discussions of these fields have been prepared by F. C. Bauer in Illinois Agricultural Experiment Station Bulletin 402, "Crop Yields from Illinois Soil Experiment Fields in 1933."

The influence of various liming materials on the leaching of lime, magnesia, potash, nitrates, and sulphates from two soils in Tennessee and Virginia are reported by W. H. MacIntire, W. B. Ellett, W. M. Shaw, and H. H. Hill, in Tennessee Agricultural Station Bulletin 152 entitled, "The Conservation of Burnt Lime, Limestone, Dolomite, and Calcium Silicate in Soil as Influenced by Methods of Incorporation." The results obtained varied in some cases with the two soils, while in others the added liming materials produced about the same effects at both locations. Large infrequent applications of liming materials in general caused more leaching of lime than smaller and more frequent applications. Dolomitic liming materials caused less loss of calcium than high-calcium material, but increased the leaching of magnesium, as might be expected. High-calcic limestones decreased the leaching of magnesium in most cases on the Tennessee soil, but not on the Virginia soil. Considering total calcium and magnesium combined, dolomite caused a greater loss of these on the Tennessee soil, whereas the various liming materials were inconsistent in this respect on the Virginia soil. In practically all cases the liming materials decreased the potash in the leachings. This is further evidence that under practical field conditions, liming does not make available the natural soil potash. Liming increased nitrate production on both soils, but at different times. On the heavy Tennessee soil the effects of the liming were greater during the first four years than during the second four years of the experiment. On the lighter Virginia soil the effects of liming were small and sometimes variable on nitrate production during the first four years. During the second four years the effects were much more beneficial. Liming increased somewhat the leaching of sulphates from both soils. This interesting and instructive work is the result of parallel experiments conducted at the Virginia and Tennessee Experiment Stations and is a fine example of what can be accomplished by cooperative work by two institutions.

"Testing Soil for Available Phosphorus," Agr. Exp. Sta., Urbana, Ill., Cir. 421, Apr. 1934, C. M. Linsley.

"Response of Illinois Soils to Limestone," Agr. Exp. Sta., Urbana, Ill., Bul. 405, June 1934, F. C. Bauer.

"Schuyler County Soils," Agr. Exp. Sta., Urbana, Ill., Soil Report No. 56, Mar. 1934, E. A. Norton, R. S. Smith, E. E. DeTurk, F. C. Bauer, and L. H. Smith.

"Experimental Studies on the Development of Heavy Claypans in Soils," Agr. Exp. Sta., Columbia, Mo., Res. Bul. 210, June 1934, Guy D. Smith.

"The Physico-Chemical Properties of Soils Affecting Soil Erosion," Agr. Exp. Sta., Columbia, Mo., Res. Bul. 212, July 1934, J. Fulton Lutz.

"Vineyard Soil Management," State Fruit Exp. Sta., Mountain Grove, Mo., Bul. 27, Jan. 1934, F. W. Faurot.

"Soils of Pondera County," Agr., Exp. Sta., Bozeman, Mont., Bul. 291, June 1934, L. F. Gieseker.

"The Principal Soils of New Jersey and Their Utilization for Agriculture," Agr. Exp. Sta., New Brunswick, N. J., Bul. 569, June 1934, Linwood L. Lee.

"Some Potential Changes Induced by Liming Suspensions of a Peat Soil," Agr. Exp. Sta., State Col. Sta., Raleigh, N. C., Tech. Bul. 47, June 1934, L. G. Willis.

"Normal Crops and the Supply of Available Soil Manganese," Agr. Exp. Sta., Kingston, R. I., Bul. 246, July 1934, Basil E. Gilbert.

"Soil Survey of The Suisun Area, California," U. S. D. A., Washington, D. C., Series 1930, No. 18, E. J. Carpenter and S. W. Cosby.

"Soil Survey of Queen Annes County, Maryland," U. S. D. A., Washington, D. C., Series 1931, No. 3, S. O. Perkins and H. B. Winant.

"Soil Survey of Dundy County, Nebraska," U. S. D. A., Washington, D. C., Series 1931, No. 1, E. A. Nieschmidt, B. J. Abashkin, F. A. Hayes, and S. Rankin Bacon.

"Soil Survey of Furnas County, Nebraska," U. S. D. A., Washington, D. C., Series 1930, No. 16, L. A. Brown and S. R. Bacon.

"Soil Survey of Steuben County, New York," U. S. D. A., Washington, D. C., Series 1931, No. 2, C. S. Pearson, F. B. Howe, D. F. Kinsman, Robert Wildermuth, R. C. Roberts, and A. H. Hasty.

Crops

For the growers of cotton, an important new bulletin appears in the form of "Control of Cotton Wilt and Rust," Bulletin No. 308 of the Arkansas Agricultural Experiment Station. J. O. Ware and V. H. Young, the authors, report in this publication a continuation and amplification of previous work on varietal resistance to cotton wilt and give the results of studies designed to secure practical control measures for the wilt of cotton caused by (*Fusarium vasinfectum*) and "rust," or potash hunger. In summarizing their detailed observations, it is indicated that if sufficient amounts of potash, either in the form of muriate of potash or kainit, are used to control "rust," or potash hunger, the incidence of cotton wilt is greatly reduced. When potash is applied alone, however, yields of seed cotton are often markedly inferior to those when the same amount of potash is used in a complete fertilizer. Nitrate of soda and superphosphate alone and in combinations are ineffective for the control of cotton wilt and "rust." Stable manure applied at the rate of 10 tons per acre gave yield increases comparable to those secured by the application of 600 pounds of a 6-8-6 fertilizer and gave good control of "rust." However, it was only slightly effective in cotton wilt control. The authors feel, that although further work is needed, indications are that the best program for the control of cotton wilt and "rust" will result from the use of a suitable wilt-resistant variety and the application of a mixed fertilizer containing sufficient potash to eliminate "rust," or potash hunger.

A very attractive publication, "Horticulture at the Ohio Experiment Station," Special Circular No. 45, is designed to bring together some of the more important practical results of the Ohio Department of Horticulture in convenient form for the readers. With previous Ohio publications of a similar nature, it may serve as a handbook of horticultural practices. This circular will be wanted by all who aim to keep abreast with this important field of American agriculture.

"Soybeans," Agr. Exp. Sta., Auburn, Ala., Leaflet No. 2, July 1934.

"Peanuts," Agr. Exp. Sta., Auburn, Ala., Leaflet No. 5, July 1934.

"Lespedeza," Agr. Exp. Sta., Auburn, Ala., Leaflet No. 6, July 1934.

"Pastures for Alabama," Agr. Exp. Sta., Auburn, Ala., Leaflet No. 7, July 1934.

"Fundamental Concepts in Plant Research,"

Agr. Exp. Sta., Tucson, Ariz., Bul. 147, June 1934, J. F. Breazeale.

"Permanent Pastures," Agr. Exp. Sta., Fayetteville, Ark., Bul. 307, May 1934, Martin Nelson.

"Irrigation Experiments with Prunes," Agr. Exp. Sta., Berkeley, Calif., Bul. 573, May 1934, A. H. Hendrickson and F. J. Veihmeyer.

"A Sixteen-Year Experiment of Apricot Pruning," Agr. Exp. Sta., Berkeley, Calif., Bul. 574, May 1934, H. S. Reed.

"Hotbeds and Coldframes," Agr. Exp. Sta., Fort Collins, Colo., Bul. 328, (Rev.), Aug. 1934, A. M. Binkley and Richard V. Lott.

"Growing Potatoes in Colorado," Agr. Exp. Sta., Fort Collins, Colo., Bul. 412, July 1934, C. H. Metzger.

"Pasture Investigations in Southern Delaware," Agr. Exp. Sta., Newark, Del., Bul. 189, May 1934, Geo. L. Schuster and C. E. Phillips.

"The Pectic Constituents of Citrus Fruits," Agr. Exp. Sta., Gainesville, Fla., Bul. 268, June 1934, L. W. Gaddum.

"Forty-sixth Annual Report for the Year 1933-34," Ga. Exp. Sta., Experiment, Ga., H. P. Stuckey.

"The Subsistence Garden for the Coastal Plain of Georgia," Ga. Coastal Plain Exp. Sta., Tifton, Ga., Cir. 5, April 1934, Otis Woodard.

"Late-sown Emergency Feed Crops for Illinois," Agr. Exp. Sta., Urbana, Ill., Cir. 423, June 1934, L. H. Smith.

"Production and Marketing of Redtop," Agr. Exp. Sta., Urbana, Ill., Bul. 404, June 1934, W. L. Burlison, C. L. Stewart, R. C. Ross and O. L. Whalin.

"Woodland Carrying Capacities and Grazing Injury Studies," Agr. Exp. Sta., Lafayette, Ind., Bul. 391, Mar. 1934, Daniel Den-Uyl and Ralph K. Day.

"Marketing Vegetables Produced on Northern Indiana Muck Soils," Agr. Exp. Sta., Lafayette, Ind., Bul 392, Mar. 1934, Fay C. Gaylord and Harry M. Cleaver.

"Tomato Quality Studies—Field and Harvest Factors Affecting Grade," Agr. Exp. Sta., Lafayette, Ind., Bul. 394. Mar. 1934, Fay C. Gaylord and John H. MacGillivray.

"Lawns in Kansas," Agr. Exp. Sta., Manhattan, Kan., Bul. 267, May 1934, J. W. Zahnley and L. R. Quinlan.

"Studies of Frenching of Tobacco," Agr. Exp. Sta., Lexington, Ky., Bul. 349 (Research), Apr. 1934, P. E. Karraker and C. E. Bortner.

"Soybeans for Hay and Seed," Agr. Exp. Sta., College Park, Md., Ext. Cir. 106, May 1934, F. W. Oldenburg.

"Crop and Soil Management Practices," Agr. Exp. Sta., College Park, Md., Bul. 362, Apr. 1934.

"Value of Natural Weed Fallow in the Cropping System for Tobacco," Agr. Exp. Sta., College Park, Md., Bul 363, May 1934, D. E. Brown and J. E. McMurtrey, Jr.

"Suggestions on Planting Orchards," Agr. Exp. Sta., East Lansing, Mich., Reg. Bul. 262 (3rd Rev.), Nov. 1933, Roy E. Marshall.

"Tests Show Better Ways to Grow Michigan Potatoes," Agr. Exp. Sta., East Lansing, Mich., Spec. Bul. 245, Dec. 1933, J. J. Bird and H. C. Moore.

"Relation of Light Intensity to Fruit Setting in the Sour Cherry," Agr. Exp. Sta., East Lansing, Mich., Tech. Bul. 136, Jan. 1934, G. F. Gray.

"The Premature Seeding of Celery," Agr. Exp. Sta., Bozeman, Mont., Bul. 292, June 1934, C. C. Starring.

"Bindweeds and Their Control," Agr. Exp. Sta., Lincoln, Neb., Bul. 287, May 1934, T. A. Kiesselbach, N. F. Petersen, and W. W. Burr.

"Common Grass Weeds of Nebraska," Agr. Exp. Sta., Lincoln, Neb., Bul. 288, June 1934, F. D. Keim and A. L. Frolik.

"Hyacinths for Garden and Home," Agr. Exp. Sta., New Brunswick, N. J., Ext. Bul. 118, May 1934, H. M. Biekart.

"Growing Onions in New Jersey," Agr. Exp. Sta., New Brunswick, N. J., Ext. Bul. 129, June 1934, C. H. Nissley.

"Sweet Corn Growing," Agr. Exp. Sta., New Brunswick, N. J., Ext Bul. 130, June 1934, C. H. Nissley.

"Growing Eggplants in New Jersey," Agr. Exp. Sta., New Brunswick, N. J., Ext. Bul. 131, June 1934, C. H. Nissley.

"Growing Peppers in New Jersey," Agr. Exp. Sta., New Brunswick, N. J., Ext. Bul. 133, June 1934, C. H. Nissley.

"Parsnips," Agr. Exp. Sta., New Brunswick, N. J., Ext. Bul. 135, June 1934, C. H. Nissley.

"Chinese Cabbage," Agr. Exp. Sta., New Brunswick, N. J., Ext. Bul. 136, June 1934, C. H. Nissley.

"Utilization of Nutrients by Colonial Bent and Kentucky Bluegrass," Agr. Exp. Sta., New Brunswick, N. J., Bul 570, May 1934, Howard B. Sprague.

"American Potato Journal," The Potato Assn. of America, Somerville, N. J., Vol. XI, No. 9, Sep. 1934.

"Cotton Spacing Experiments in the Mesilla Valley, New Mexico," Agr. Exp. Sta., State College, N. M., Bul. 219, Mar. 1934, A. R. Leding and L. R. Lytton.

"Results of Irrigation Treatments on Acala Cotton Grown in the Mesilla Valley, New Mexico," Agr. Exp. Sta., State College, N. M., Bul. 220, Mar. 1934, A. S. Curry.

"Plant Propagation," Agr. Exp. Sta., Geneva, N. Y., Cir. 138 (Rep.), July 1, 1934, H. B. Tukey.

"Cherry Growing in New York," Agr. Exp. Sta., Geneva, N. Y., Cir. 145, July 1, 1934.

"Home Culture of Roses," Agr. Exp. Sta., State College Sta., Raleigh, N. C., Ext. Cir. 200, June 1934, Glenn O. Randall.

"Pastures in North Carolina," Agr. Exp. Sta., State College Sta., Raleigh, N. C., Ext. Cir. 202, Sep. 1934, E. C. Blair and A. C. Kimrey.

"The Quarterly Bulletin," Agr. Exp. Sta., East Lansing, Mich., Vol. 17, No. 1, Aug. 1934.

"The Bimonthly Bulletin," Agr. Exp. Sta., Wooster, Ohio, Vol. XIX, No. 170, Sep.-Oct. 1934.

"Some Factors Which Influence the Fruiting Habit of Henderson's Bush Lima Bean," Agr. Exp. Sta., Wooster, Ohio, Bul. 535, June 1934, Leon Havis.

"Alfalfa—Timothy Hay for the Dairy Farm," Agr. Exp. Sta., Wooster, Ohio, Bul. 538, Aug. 1934, Myron A. Bachtell, Harold Allen, and C. F. Monroe.

"Growing Cotton Under Irrigation in the Wichita Valley of Texas," Agr. Exp. Sta., College Sta., Tex., Bul. 494, Aug. 1934, C. H. McDowell.

"Growing Alfalfa," U. S. D. A., Washington, D. C., Farmers' Bul. 1722, Mar. 1934, H. L. Westover.

"Farm Practice with Lespedeza," U. S. D. A., Washington, D. C., Farmers' Bul. 1724, Mar. 1934, H. A. Miller.

"Forage-Crop Field Experiments at West Point, Miss.," U. S. D. A., Washington, D. C., Tech. Bul. 419, Apr. 1934, T. F. Akers and H. L. Westover.

"Department of Agriculture—Immigration of Virginia," Buls. 318, 319, 320, Aug., Sep., and Oct. 1934.

"Filbert Culture," Agr. Exp. Sta., Pullman, Wash., Ext. Bul. 194, June 1934, C. D. Schwartze.

Economics

"The Utilization of El Dorado County Land," Agr. Exp. Sta., Berkeley, Cal., Bul. 572, May 1934, David Weeks, A. E. Weislander, and C. L. Hill.

"Types of Farming in Illinois," Agr. Exp. Sta., Urbana, Ill., Bul. 403, June 1934, by H. C. M. Case and K. H. Myers.

"Michigan Farm Prices and Costs 1910-1934," Agr. Exp. Sta., East Lansing, Mich., Tech. Bul. 139, June 1934, Orion Ulrey.

"An Analysis of Agriculture on the Milk River Irrigation Project," Agr. Exp. Sta., Bozeman, Mont., Bul. 290, June 1934, P. L. Slagsvold and G. H. Bingham.

"New York Market Prices of Certain New Jersey Vegetables, 1910-1933," Agr. Exp. Sta., New Brunswick, N. J., Bul. 575, June 1934, Allen G. Waller and John W. Carncross.

"An Economic Study of Land Utilization in Tompkins County, New York," Agr. Exp. Sta., Ithaca, N. Y., Bul 590, April 1934, A. B. Lewis.

"North Carolina Farm Prices of Cotton in Relation to Grade and Staple Length," Agr. Exp. Sta., State Col. Sta., Releigh, N. C., Bul. 289, April 1934, Joseph G. Knapp, and Sheldon L. Clement.

"Farm Real Estate Tax Delinquency in South Carolina," Agr. Exp. Sta., Clemson College, S. C., Bul. 298, Aug. 1934, G. H. Aull and Ernest Riley.

"Crop Insurance Features of Agricultural Adjustment Programs," U. S. D. A., Washington, D. C., Leaflet G-12, June 1934.

"Economic Trends Affecting Agriculture," U. S. D. A., Washington, D. C., July 1933, Louis H. Bean and Arthur P. Chew.

"Grade and Staple Length of Cotton Carried Over in the United States as Related to the Domestic Supply, 1928-29 to 1931-32," U. S. D. A., Washington, D. C., Stat. Bul. 45, Feb. 1934, W. B. Lanham and O. T. Weaver.

"Fluctuations in Prices of Cotton Futures Contracts," U. S. D. A., Washington, D. C., Tech. Bul. 423, April 1934, L. D. Howell.

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The Inquiring Mind

(*From page* 14)

and he has served as personal representative of Governor Moore in dealing with the status of P.W.A. projects in New Jersey. There have been between 2,500 and 3,000 persons employed on these projects. Dr. Lipman also is Director of Emergency Relief for New Brunswick and Highland Park, and a member of the Middlesex County Emergency Re-employment Committee.

One marvels at the capacity of this great "man of parts" for work, and wonders that he has been able to carry on for so long the exacting duties as an administrator, while retaining his

active supervision of scientific research and his intimate touch with the development of science. But now he has been granted a Sabbatical leave of absence of one year, during which vacation(?) he will enjoy himself by making a comprehensive study of the soil resources of the United States. He then will prepare a monograph which will contain data dealing with the various types of soil and their adaptability to agricultural uses, particularly with reference to a long-time program of conservation and development based upon a sound governmental policy of land utilization.

It strikes one that these multifarious and strenuous tasks are far too exacting for any ordinary human to undertake and carry through; but Dr. Lipman evidently is an extraordinary man, and we trust he may survive without a nervous breakdown and serious weakening of his wonderful stamina and ability for versatile service. He was equally busy during the World War period, and thus commented on the tension it entailed, "I wake up in the morning with a vision of the pile of mail waiting for me, requests I cannot fill, complaints I cannot help, work piled and piled without end, and I have an idea I'd rather prefer the trenches."

New Jersey's Agriculture First

When Dr. Lipman assumed the directorship of the Experiment Station in 1911, he determined that its work should be closely related to the agricultural needs of New Jersey. He recognized the trend toward specialization in New Jersey agriculture, and sought to have the station point the way to new advanced practices. These objects he fostered and consummated. Within three years the five new departments of Agronomy, Extension, Farm Management, Plant Pathology, Poultry Husbandry, and Seed Analysis had been established, and gradually from that time forward, practically every phase of agricultural education, practice, scientific research, and methods of carrying messages of results to the farmers of the State were introduced, given due consideration, equipped, and made of real service to the people. During his administration the land holdings of the College and Experiment Station have increased from 142 to 535 acres. Other areas, operated or controlled by the institution, brought the total area of the college farm in 1930 to 690 acres. In that year, the land and buildings of the College of Agriculture were appraised at $2,175,720.

The Station's Responsibility

Relative to the future services of the Station, and other agricultural experiment stations, it is the opinion of Dr. Lipman that cognizance must be taken of the growing demand of our industries for research facilities that only a well-organized research institution can provide. With the coming years, our experiment stations will need to reckon more with conditions that govern the accepting of research grants from industries which are willing to pay for the research service, but which, as a part of the economic life of the State, have a right to expect help analogous to that given to the agricultural industry. Beyond that, various organizations, like those of the livestock breeders, dairymen, gardeners, distributors of various commodities, manufacturers of implements, garden clubs and country clubs, will expect the institution to formulate policies and to help toward their execution, for the sake of promoting interests not alone of individuals, but of larger or smaller groups that have an interest in economic and social progress. "The Station, through its research and educational policy, should aim to make the State more attractive to its residents culturally, as well as economically. If this assumption is correct, the institution will need to assume a larger responsibility in dealing with the esthetic and cultural needs of the State."

Shortly after Dr. Lipman succeeded

Dr. Voorhees as director in the autumn of 1911, he urged revision of the fertilizer, feed, and insecticide laws. Since the enactment of the first fertilizer control laws in 1874, there had been a phenomenal development in the use of fertilizers on New Jersey farms. More recently, too, there had been a similar increase in the volume of feeding stuffs and insecticides used. A new law was adopted by the legislature of 1912 and, with slight amendment, has remained adequate up to the present time. In the same year revised laws relating to feeding stuffs and to insecticides also were passed by the legislature, and in 1913 the inspection of lime was provided for by law. As a result of the enactment of the laws mentioned, farmers quickly learned to check up on their fertilizer purchases by studying the published analyses of various brands, many of which in the early days were made by Dr. Lipman. In 1855 it was said that "no other one line of work seems so fully understood and appreciated by farmers as the study of fertilizers." In 1902 it was observed that "The progressive farmer is now educated. He knows that in the purchase of fertilizers value depends, not upon the name of the manufacturer or his brand, but upon the kind, the quantity, and the quality of the plant-food constituents that are furnished."

Work Attracts Students

Dr. Woodward tells us that Dr. Lipman's accomplishments have attracted many graduate students to Rutgers who studying under his direction have acquired something of his enthusiasm and insight into soil science. A number of such men, in time, have become research assistants on the Experiment Station staff, some of them being advanced to positions of larger responsibility. Students have been attracted from many States in the Union, as well as from Australia, Austria, Belgium, Brazil, Canada, China, Cuba, Czechoslovakia, Denmark, England, Estonia, France, Germany, Greece, Holland, India, Japan, Palestine, Porto Rico, Russia, Santo Domingo, South Africa, Sweden, and Switzerland. The exchange of widely different ideas among students has been of inestimable benefit. The eminent men Dr. Lipman has trained have a strong sense of personal attachment to him, and a similar feeling of confidence and personal affection is to be found among many others who have come in contact with him in one way or another, and admire him for his reputation as a scientist and a public servant, and are appreciative of services rendered.

Rare Personal Charm

No estimate of Dr. Lipman would be complete without reference to his rare personal qualities. He is a man of great brain power, extraordinary vision, and great powers of endurance in arduous duties. Furthermore we are told by Dr. Woodward that he has a great sense of humor and is a delightful companion. His genius for telling stories suggests the traditional Abraham Lincoln. Often when in conference the atmosphere threatened to become tense during the debate on a controversial issue, Dr. Lipman has drawn upon his inexhaustible fund of anecdotes and told one so appropriate that the air was cleared.

Humor and profound wisdom and dignity rarely grace an individual, but Dr. Lipman is blessed with the combination which makes him the more likable and respected. Looking back upon his efforts, he has expressed the hope that the devotion to a good cause which has inspired them in him will abide and that strength and grace will be granted to make him a worthy follower of the seekers of truths and of the dreamers of dreams who have gone before. We share in that hope, know that the aspiration has been lived up to in the past, and feel sure that in his remaining years Dr. Lipman will earn and receive added honors and continued admiration, esteem, and sincere gratitude throughout the land.

Better Vegetable Seed

THE general quality of the seed offered to market gardeners and canners is distinctly better than it was 5 or 6 years ago, says Victor R. Boswell of the United States Department of Agriculture. Vegetable specialists of the Bureau of Plant Industry and of 20 State agricultural experiment stations are conducting intensive studies of the principal kinds and varieties of vegetables.

These studies are designed to create nationally known standards for varieties so that the various growers of seed of a certain variety are more likely to work toward the same ideal type than they were when each grower was selecting his seed-bearing plants according to his own judgment of what gardeners wanted.

By comparison plantings of the leading varieties of vegetables in several important truck and market garden areas, these specialists are collecting definite evidence as to which varieties are best for each region. Their studies afford a basis for untangling the confusion of names under which the same variety or strains closely similar have been marketed under a large number of names.

The result is that seed houses now realize that there is no need to handle so many varieties and differently named strains of each vegetable. They need no longer try to supply seed of 4 or 5 named varieties which are in fact almost identical. A valuable result is that growers and dealers can devote more care and attention to the seed crops of the important varieties and are better able to improve the quality and purity of the comparatively few strains of each vegetable which are really of superior value.

Sweetpotato Starch

A METHOD of producing high-grade starch from sweetpotatoes has been developed by the United States Department of Agriculture and it is believed a suitable market for this starch will be provided by the demand of cotton mills for sizing and by the requirements of other industries, according to H. S. Paine of the Bureau of Chemistry and Soils.

The sweetpotato is one of the most important vegetable crops grown in the United States, being second in value only to the white potato. It is particularly well adapted to soil and climatic conditions along the Coastal Plain from New Jersey to Texas. A large proportion of the crop consists of cull and second-grade potatoes, for which there is no adequate market.

Various starches differ in their properties and suitability for different uses, and for this reason sweetpotato starch is not competitive with domestic corn starch. Starch from sweetpotatoes, which has been produced up to this time, has been gray in appearance and of poor quality because of colored compounds and other nonstarch substances which have not been removed from it.

A procedure in which colored compounds are washed out of the starch during the manufacturing process by means of a dilute alkaline sulphite solution has been developed, and a starch of a high degree of purity and excellent color has been produced. The softening action of the chemicals on the fibrous material in the potato has also resulted in a more complete removal of starch from the pulp and a consequent material increase in the yield of starch.

Oregon Finds Profit *in* Potash Fertilizers

By Joe W. Jarvis

Agricultural Instructor, Imbler, Oregon

RESULTS of field demonstrations with commercial fertilizers on silt loam soil in Oregon, with such varied crops as cucumbers, raspberries, sweet corn, potatoes, and mangels, have been consistently favorable to fertilizers. When properly used, fertilizers increased yields and improved the quality of the crops, thereby contributing substantially to greater net returns. That potash occupies a very important place in the fertilizer application also was made clear.

The demonstrations, conducted over the past five years, were under the supervision of Glenn Weaver, Agricultural Instructor, Union High School, Gresham, Oregon. Mr. Weaver watched the work very closely. He was present at the time of measuring off the plots, applying the fertilizers, and at the time of harvest, besides observing the growth from time to time.

Three cucumber demonstrations were conducted, and all showed that a nitrogen fertilizer applied alone does not materially increase the yield of cucumbers; in fact, one plot showed a marked decrease. The yield was increased where phosphate was used more than by either of the other two elements applied singly. When applying 1,000 pounds of a mixture containing 3 per cent nitrogen, 10 per cent phosphate, and 10 per cent potash, the best results of any of the combinations were obtained. In one case the check plot that received no fertilizer yielded 12,260 pounds of cucumbers per acre, while the plot receiving the 1,000 pounds of 3-10-10 mixture produced 19,980 pounds of cucumbers, or an increase of 7,720 pounds per acre.

The raspberry plots gave results similar to the results from other demonstrations conducted by the county agents, and showed that nitrogen alone caused the berries to be soft; that phosphate enabled the canes to resist winter-killing to a considerable degree; and that potash produced a firm-textured berry. About 1,000 pounds of 3-10-7 mixture per acre seemed to be the best application.

When berries are used for freezing purposes, a firm-textured berry is desirable. Also, berries arriving on the market in a firm condition always sell readily. Therefore, it appears to be profitable to apply potash to berry soils.

There were four sweet corn demonstrations. One proved that the small amount of landplaster that sticks to the dampened seed before planting increased the yield considerably, making a production of 14,688 ears. The plot treated with phosphate and potash produced 14,240 ears. The one given phosphate alone yielded 14,016 ears; and the check plot dropped to 13,040 ears. In this demonstration the landplaster plot came up first, matured first, and gave the largest yield. In the case where phosphate and potash were used, a better quality was obtained.

In another demonstration 100 pounds of landplaster per acre were applied. In this case higher yields, earlier maturity, and better quality were noted. Another plot was treated with nitrogen. It came up last, matured slowly, and gave a lower yield

than the check plot receiving no fertilizer.

The third demonstration consisted of eight plots. The check plot again out-yielded the plot treated with nitrogen fertilizer. The area treated with 300 pounds of 3-14-14 per acre gave the best results, with the plot treated with manure supplemented by superphosphate rating second.

The fourth demonstration was checked by the number of pickings and the average weight per sack of each picking. One plot was treated with 350 pounds of 3-10-10 per acre. Another plot was treated with 150 pounds of landplaster and 150 pounds of sheep guano per acre, while the other plot was a check receiving no fertilizer. The 3-10-10 plot gave more sacks per acre, fewer pickings, one week earlier harvest (which is important in marketing sweet corn), a shorter harvest, heavier weights per sack, and the most desirable market grade.

In the case of potatoes, potash alone applied at the rate of 500 pounds per acre gave by far the most outstanding results. This plot produced 218 sacks of U. S. No. 1's per acre. The check plot yielded 115 sacks of U. S. No. 1's, or 103 sacks less than the plot receiving the potash. On the potash plot it was noted that vine color was better and no blight was present, evidence that potash makes healthier plants. With the 500 pounds of potash costing only $13, it is easy to see the profit in this treatment.

Other plots in this potato test were: 10 tons of manure per acre; 10 tons of manure, supplemented with 600 pounds of superphosphate per acre; 800 pounds of 0-10-10; 1,000 pounds of 3-10-10; and one with 600 pounds of superphosphate alone. All treatments gave an increase in yield except the plot on which superphosphate was used alone.

In the mangel experiment only one demonstration was conducted. A fertilizer mixture of 4-5-10 applied at the rate of 1,000 pounds per acre produced 30.76 tons per acre, and the check plot 18.4 tons per acre, or an increase of 12.36 tons per acre. With such an increase in the crop, the $20 per acre investment for fertilizers was well worth while.

New Phosphorus and Potash Tests

NOW farmers who wish to know whether their soils are lacking in phosphorus or potash have new, cheap, and practical tests which will help them to find out. Recently tests have been developed by which county agents, agricultural teachers, and others can quickly and easily determine whether any soil needs phosphorus or potash.

A new biological test, called the Cunninghamella test, was recently perfected by A. Mehlich, E. B. Fred, E. Truog, and W. H. Peterson of the University of Wisconsin. Samples of soil are planted with a mold organism called Cunninghamella. This mold grows on the soil sample. Then the soluble phosphate content of the soil sample is judged by the amount of growth of these mold colonies.

During the trial experiments some 15 different species of mold were studied, and Cunninghamella showed the fastest response of all to the amount of soil phosphates in a sample of soil. This mold is related to the common gray bread mold fungi. It produces a raised grayish mass of growth on top of the culture medium in the soil sample. The size of this mold growth is proportional to the amount of available phosphorus present in the soil.

The directions for making the test are to fill a small glass dish with a sample of soil to be tested, and wet it with a nutrient solution free of phos-

phorus. A standard amount of mold spores (seed) is then placed in the center of the soil sample. Next, the dish is put in a moist chamber and incubated (heated) at 77 degrees F. for 48 hours. After the 48 hours, the diameter of the mold growth is measured and compared with a chart made for this purpose.

This new method has been tried on many soil samples whose available phosphorus content is known and the test was found to be accurate. The amount of growth of Cunninghamella fungus on soil samples has been found to correspond to the crop growth on these same soils, which further confirms the test.

The quick, reliable potash test was devised by N. J. Volk and E. Truog at the University of Wisconsin. In making this test, a small sample of soil is shaken in a bottle containing a liquid which will dissolve out the available potash. Part of the dissolved potash is filtered out and placed in a small bottle to which is added a special solution of sodium cobaltinitrate. The potash will cause the liquid to form a cloudy, muddy solution.

The amount of available potash in the soil sample is then determined by comparing the cloudiness of the liquid with that in a special standard turbidity comparator (standard cloudiness scale). The results of this test compares favorably with those from more elaborate laboratory tests for available potash. The new test is now being used extensively in the State soils laboratory and is practical for use by county agents and agricultural teachers.—*L. Van Bossche*

The Compost Pile

MUCH use can be made of the leavings in the garden this fall if they are made into a compost pile. Owing to the scarcity of manure, here is a good way of saving the garden refuse, and by mixing with some soil and fertilizer a pile of good rich soil may be had in the years to come. Leaves, cornstalks, grass, straw, etc., may be used.

Make the compost pile to one side of the garden where it will not be in the way. Put down a good layer of soil, 6 to 8 inches deep and rectangular in shape, then put on a layer of leaves, stalks, or other refuse, to the depth of 6 or 8 inches and sprinkle with about 50 pounds of a high-grade fertilizer, containing a high percentage of phosphoric acid and potash per ton of soil and roughage. Cover with more soil, more refuse, and repeat with the fertilizer until you have the pile of the proper size. The top layer should be of soil leveled off in order to catch as much rainfall as possible. If manure is available, use manure instead of commercial fertilizer or phosphate.

By starting a compost pile this fall you will not only aid in cleaning up the garden, but will have the jump on those that wait until spring.

The compost pile should not be used until the materials have rotted. Generally, it is best to wait a year or so before disturbing. There are commercial products upon the market that one may purchase which aid and hasten the decomposition.

Greenhouse men find the compost pile almost indispensable for good soil for potting and growing plants. Their method of making a compost pile is by using a layer of thick sod followed by a good layer of manure and so on up as high as desirable and as long as needed. These piles of compost are built for use in the future.—*W. B. Ward, Extension Horticulturist, Purdue University*

Memories of a Devil

(*From page 6*)

minds to it a bit, is it not true that the deep morass of national blundering, the pandering to speculative orgies, and the unbalancing of fair opportunity in American life have all occurred in this present era of universal publicity?

Right in the midst of the metropolitan press, the far-flung, news-gathering bureaus, the marvels of radio, and the lightning speed of communication, we have witnessed the worst debauch of native morals and traditions since the sixteenth century. What crusading occurred in rare instances against unseemly practices in finance was blanked and offset by the advertising and the stock dope carried in adjacent columns. I am sorry to say some of our modest western sheets did not escape the gambling fever.

Then again, perhaps we had such a mess of muck that our hands grew weary of the raking and we asked for more livid entertainment and the solace of inertia.

It seems time, therefore, to count on that old bulwark of original native power—the rural press—to do for our country majority what the Broadway stunt artists and scandal hounds have undone for the ruralites who moved cityward a generation ago only to get a headache. Maybe it is time to advertise for a few zealous young fellows to return to the home town and expend their energy and courage starting as devils on the road to rugged command of sound public opinion and clean public information.

Just as it is so often said that America cannot completely recover industrial vigor without a sound agricultural structure, so do I earnestly believe that American resolve to rewrite the rules of the game depends largely on the restoration of those fundamentals belonging peculiarly to the age of the hand press and the country editor in his shirt sleeves.

And when that time comes I should be almost eager to answer the advertisement and go back to start over as a devil again. It would at least be simpler and nobler than trying to be a saint somewhere else. Especially if Tony was still generous with his snuff!

Better Crops for Del-Mar-Va

(*From page 10*)

where 200 pounds of muriate of potash were applied in addition to the regular 6-6-5 fertilizer resulted in doubling the yield of corn. As these growers applied 2,000 pounds of a 6-6-5 mixture on the land, it is evident that more potash than is being applied is needed to produce anywhere near an optimum crop under these conditions.

In view of the above experiments, demonstrations, and farm practices, it is evident that heavier applications of potash than are now being used, together with good seed, the proper rotation, etc., will result in a marked increase in yield of corn. Falling stalks due to root rot will be decreased, more fodder will be produced. There will be a better quality grain with more starch and thus less chaffy kernels and lower production costs because of the increase in yield and quality. The corn crop instead of being a "side issue" in so many cases will become one of the best paying crops produced on the farm.

SERVICE

First Collegian: "Gotta match?"

Second Ditto: "Sure."

First Collegian: "Gimme a cigarette."

Second Collegian: "Want me to light it for ya?"

First Ditto: "If ya don't mind."

Second Ditto: "How ya fixed fer spitt'n'?"

Bernice: "I suppose you have been reading all about those Canadian quintuplets in the papers."

Evelyn: "I should say so, and it looks to me like it was one Five-year Plan that went wrong."

A small boy was trying to lead a big St. Bernard dog up the road.

"Where are you going to take that dog, my little man?" asked a kindly passerby.

"I'm going to see where he wants to go first," was the breathless reply.

BIG-HEARTED

"I understand you've got your divorce, Mandy. Did you get any alimony from your husband?"

"No, Mrs. Jones, but he done give me a first-class reference."

It wouldn't hurt any if the colleges would work their way through some of the students.

Customer (suspicious) — "How is the hash made here?"

Waiter—"Made, sir? Ash aint made—it just accumulates."

HIS REWARD

Pat determined to pass his favorite "pub" on his way home. As he approached it he became somewhat shaky, but, plucking up courage, he passed it. Then, after going about fifty yards, he turned, saying to himself, "Well done, Pat, me boy. Come back and I'll treat ye."

A three-year-old girl was taught to close her evening prayer, during the absence of her father, with "—and please watch over my daddy."

One night, much to her mother's surprise, she added, "—and you'd better keep an eye on mamma, too."

Leader at village band practice: "Ezry,—ye'r two bars behind t'others."

Ezry (testily): "Never mind that! I kin catch up to 'em any time I want to."

A comely colored girl has just been baptized in the river. As she came to the surface she cried, "Bless de Lawd, I'se saved! Las' night I was in the ahms of Satan, but tonight Ah'm in de ahms of de Lawd!"

"Sistuh," came a baritone voice from the shore, "how is you all fixed up for tomorra ebening?"

NARROW ESCAPE

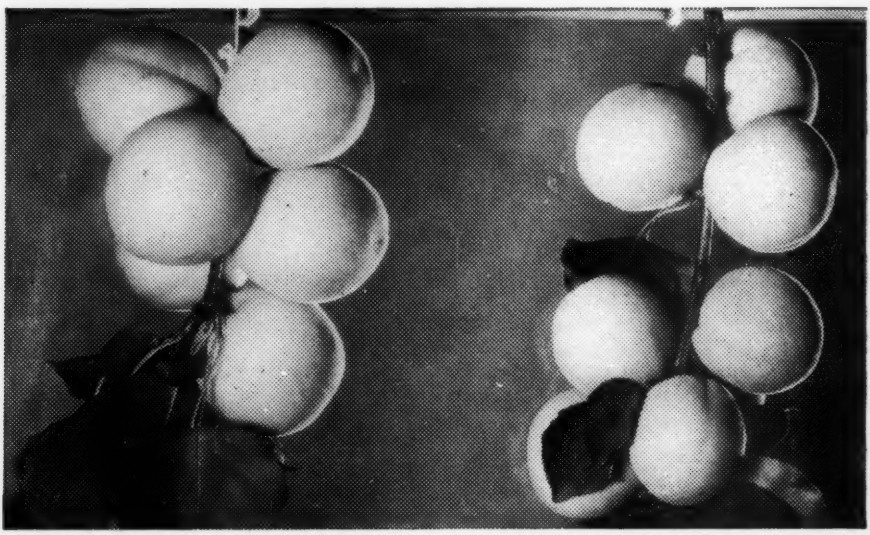
"Will you marry me?"

"No."

And they lived happily ever afterwards.

NV

SULPHATE OF POTASH is the QUALITY builder



Apricots from trees which received **NV** Sulphate of Potash alone. In former years they had been fertilized only with nitrogen...POTASH PAYS!

Apricots from trees in the same orchard, which received only nitrogen in former years and again last year received only nitrogen.

THIS photograph shows typical results obtained in F. H. Lockwood's orchard, at Evergreen, Calif. He stated that when nitrogen alone was used brown rot was a serious factor in both trees and fruit, also that the apricots split badly and were much affected by mold. Where **NV** Sulphate of Potash alone was applied there was no brown rot and practically no mold or splitting. Fruit cutters called Mr. Lockwood's attention to the superior color, appearance and firmness of the potash-fed apricots.

MAKE SURE YOUR FERTILIZER CONTAINS AT LEAST 10% POTASH

For full-bearing trees use three pounds of **NV** Sulphate of Potash or 15 pounds of mixed fertilizer containing 10% potash per tree.

POTASH PAYS ON ALL CROPS — NV — POTASH EXPORT MY. — TRADE MARK REG.

N. V. POTASH EXPORT MY., Inc.
Beans Bldg., San Jose, Calif.

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